

**1997 RAPTOR MONITORING**

**ON**

**THE OLDMAN RIVER RESERVOIR**

1997 Report Prepared For:

**GOVERNMENT OF THE PROVINCE OF ALBERTA**

***Alberta Environmental Protection***

**Edmonton, Alberta**

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## *Executive Summary*

This report covers the monitoring of Prairie falcon, Ferruginous Hawk and Golden Eagle on and adjacent to the Oldman River Reservoir during the spring of 1997. The study also includes limited monitoring of the Wildlife Control Areas which were established in 1994 specifically to protect breeding pairs of Prairie Falcon *Falco mexicanus* and Golden Eagle *Aquila chrysaetos* nesting on the banks of the reservoir. These areas, the birds they contained and human activity were monitored at each visit to the study area.

In the current year approximately 72 hours were spent in the field locating and observing nesting raptors associated with the dam. Six nesting territories of Prairie Falcon, three nesting territories of Ferruginous Hawk, and one nesting territory each of Golden Eagle and Osprey were occupied and monitored during the 1997 breeding season. All six of the Prairie Falcon territories contained pairs that attempted to nest in the current breeding season. Of these only five pair nested successfully producing 20 nestlings, which were subsequently caught and banded. Other raptor nesting territories recorded in, or adjacent to the study area included Red-tail Hawk *Buteo jamaicensis*, Richardson's Merlin *Falco columbarius richardsoni*, American Kestrel *Falco sparverius*, Swainson's Hawk *Buteo Swainsonii*, and Great Horned Owls *Bubo virginianus*.

Our field observations suggest that the nesting Golden Eagles at Horseshoe Canyon suffered little human interference and successfully fledged two young. In contrast the regular presence of people at the boat club opposite the Lang falcon nest site does suggest that this pair were subjected daily to human activity outside of the restricted area. However, no transgressions into the Wildlife Control Areas were observed, nor did we see any evidence on human activity at any of the nest sites. Disturbance is always a concern with the birds of prey, nonetheless, the presence of falcons nesting successfully at Langs and immediately downstream of the dam suggests that the extent of disturbance has decreased during the critical early nesting period when territories are established. Of specific interest was the fact that we observed little activity early in the breeding season at or near the Prairie Falcon and Golden Eagle territories delineated by buoys.

Five artificial holes were occupied during the 1997 breeding season, three by Prairie Falcons, one by Great Horned Owls *Bubo virginianus* and one by Ravens *Corvus corax*. Four nesting platforms were also utilized, one by Ferruginous Hawks, two by Canada Geese and one by Osprey. Several nest boxes were occupied by Mountain Bluebirds *Sialia currucoides*, and Tree Swallows *Tachycineta bicolor*.



## 1.0 Introduction

### 1.1 Background and Rationale

The construction and subsequent flooding of the Oldman River Dam adversely impacted raptorial birds and other sensitive species. During the construction phase several pair of raptorial birds nesting in and adjacent to the Oldman, Crowsnest and Castle River valleys were displaced by human activity and habitat alteration associated with the construction and subsequent flooding of the Oldman River Dam<sup>1</sup>.

With the completion of the dam the majority of the less tolerant species relocated to alternate natural and/or artificial nest sites in the area. Human activity has increased significantly and camping, fishing and other water-oriented recreational activities have the potential to subject the resident raptors, colonial birds, and other sensitive species to severe disturbance throughout the breeding season. As the potential for human interference is very real, Wildlife Control Areas were proposed in 1993 and put into effect in the spring of 1994. These were monitored in 1995 and to a lesser extent in this study.

## 2. OBJECTIVES

1. To monitor birds of prey associated with the Oldman River Dam and Reservoir. Specifically to “complete a field survey of nesting sites for raptors around the reservoir to determine their use in the 1997 breeding season”
2. To document any evidence of human disturbance
3. To record biological data relative to the breeding biology, populations and phenology of raptors nesting in and associated with the area impacted by the construction and flooding of the Oldman River Dam.
4. To maintain good public relations.

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<sup>1</sup> Prairie Falcon *Falco mexicanus*, Ferruginous Hawk *Buteo regalis*, Red-tailed Hawk *Buteo jamaicensis*, American Kestrel *Falco sparverius* and Great Horned Owl *Bubo virginianus*.





### **3. METHODS**

#### **3.1 Field Observations**

##### **3.1.1 Monitoring Birds of Prey:**

The primary focus of the project in 1997 was to monitor populations of breeding birds of prey associated with the Oldman River Dam. Monitoring was carried out from late March through late June to provide data on occupancy and nest success.

##### **3.1.2 Inventory of breeding birds of prey**

As in earlier years, investigations were carried out early in the spring of 1997 specifically to locate pairs and individuals occupying known breeding territories or suitable nesting habitat within 16 km. of the reservoir boundaries. Observations were continued in April, May and June to determine the breeding status and production of Prairie Falcons, Ferruginous Hawks and Golden Eagles in the study area. Once nesting territories were established and nesting initiated visits were made during April, May and June and relevant observations were recorded .

##### **3.1.3 Banding**

In 1989 and 1990 the Prairie Falcons in the study area were banded with standard USF&W numbered aluminum bands plus combinations of red, blue and black coloured bands. However, from 1991 through 1997 subsequent banding has been carried out using only the standard USF&W aluminum bands. In late June all young Prairie Falcons, Ferruginous Hawks and Golden Eagles were banded.

#### **3.2 Monitoring the effect of human disturbance**

Beginning in 1989 and continuing to the present all observed instances of interaction between raptors and humans were monitored and documented. This was felt to be of particular relevance as several instances of disturbance were observed and because earlier studies have documented adverse affects on these three species resulting from various types of disturbance (Fyfe and Olendorff 1976, Call 1978, White and Thurow 1985, Grier and Fyfe 1987). Monitoring procedures have been the same each year and we have simply taken every opportunity to document any disturbance that we observed



that could be associated with nest desertion. We did not attempt to stop any disturbance encountered, nor to interfere with any observed problem. Our observations of the activities and the subsequent results were simply documented and reported.

As in previous years in order to determine the effect of human disturbance three priorities were set:

1. To determine if there was any evidence of disturbance during the initial occupancy of nesting territories of the nesting falcons and eagles.
2. To document the general biology and to monitor natural disturbance affecting the breeding birds. This monitoring was carried out from the onset of nesting through fledging.
3. To document interaction with humans in or adjacent to the Control Areas regardless of the nature of the interaction.





## 4.0 RESULTS

### 4.1 Raptor Population Inventory

Prairie Falcons were observed in seven of twelve available nesting territories during the 1997 breeding season. Included were the three nesting territories still available on the reservoir itself<sup>2</sup>. As indicated a pair of Prairie Falcons were observed at the Maloff cliff in March and April. Unfortunately the site was deserted and no birds were observed here in May or June.<sup>3</sup> Falcons were also observed at Buffalo Jump E in April however the site was deserted in early May. The remaining five pair successfully fledged young.

The Golden Eagle territory located in the Horseshoe Wildlife Control Area was occupied again this year. The pair were observed early in incubation, near hatching and again in June with two well grown young.. Three Ferruginous Hawks territories were occupied in the current breeding season. One pair nested immediately adjacent to the reservoir south of the Day's Prairie Falcon nesting while the other two pair were located outside of limits of the reservoir but within the study area. All three pair successfully in fledged young in 1997.

In addition nesting territories of three pair of Red-tail Hawk, one pair of Merlin one pair of American Kestrel, one pair of Swainson's Hawk, , and one pair of Great Horned Owl were recorded in or adjacent to the study area.

#### 4.1.1 Prairie Falcon Production

Twenty young Prairie Falcons were produced by five productive pair (Table 1.) for an average of 4. young per productive pair, or an average of 2.9 young for seven nesting attempts. Of the original three pair of falcons immediately below the dam, only one pair was observed this spring. I suspect that the tradition at the mercury site probably has been broken and the pair at the Old Bridge site probably made no attempt to nest as a result of the increased human activity associated with the new residence directly across the river from the nest sites. Additional nesting sites and territories were lost as the

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<sup>2</sup> Pairs were present at the eyries designated in earlier reports as Maloff's, Lang's and Day's

<sup>3</sup> Nest sites in this territory were predated in 1993 and 1994 (apparently by Raccoons) and no attempt at nesting was made in 1995.



artificial holes which have been used alternately by Prairie Falcons in different years at the Castle/Stevick territory were not available in 1997<sup>4</sup>.

#### 4.1.2 Banding

Twenty nestling Prairie Falcons, seven nestling Ferruginous Hawk, and two nestling Golden Eagle were captured and banded using regular USF&W lock-on bands (Table 1)

**Table 1.**

<b><u>1997 IMMATURE PRAIRIE FALCON BANDING</u></b>			
<b>Location</b>	<b>Male</b>	<b>Female</b>	<b>Date</b>
<b>Days(artificial)</b>	816-84367 816-84368 816-84369	1807-13058 1807-13059	06-24-97
<b>Langs (natural)</b>	816-84370 816-84371	1807-13060	06-24-97
<b>Dam (artificial)</b>	816-84366	1807-13050 1807-13051 1807-13052 1807-13053	06-24-97
<b>1<sup>st</sup> Porcupine (artificial)</b>		1807-13054 1807-13055 1807-13056 1807-13057	06-24-97
<b>Fairbrother's (natural)</b>	816-84364 816-84365	1807-13049	06-24-97

#### 4.1.3 Ferruginous Hawk Production

During the current year three pair of Ferruginous Hawks were found breeding. One pair occupied the nest at Porcupine #2 a second pair at the Highway site and the third pair nested on one of the platforms just south of the cliffs at Day's. Seven nestling Ferruginous Hawk, and two nestling Golden Eagle were captured and banded using regular USF&W lock-on bands

<sup>4</sup> The three artificial holes over the river were lost due to slumping, as was the first or southernmost site at Stevick's. The remaining artificial hole at Stevick's was occupied by Ravens..



#### 4.4 Disturbance

As in other years all breeding pairs were subject to a wide range of natural disturbance and varying degrees of human related disturbance. In 1994 1995 and again in 1997, following the implementation of the Wildlife Control Areas and the placement of the signs we did not record a single instance of transgression into the areas that had been marked as off-limits to the public. Our observations suggest only minimal to moderate disturbance at any nesting site on the reservoir. In 1997 a pair of falcons were observed and subsequently nested in the artificial site located under the powerline immediately downstream of the dam. The fact that these falcons nested successfully suggests that disturbance was negligible during the critical early nesting period when territories are established.

Ferruginous Hawks were observed in three territories in 1997. As in the past four years the Ferruginous in the study area have been subjected to little human interference and our observations suggest that their production has not been influenced by disturbance.

#### 4.5 Utilization of Artificial Nest Sites

Table 4. summarizes the utilization of the artificial cliff nesting sites since 1989. Five artificial holes were occupied during the 1997 breeding season, three by Prairie Falcons, one by Ravens and one by Great Horned Owls. All nested successfully.

Prior to the 1991 breeding season nineteen nest platforms were constructed and placed on tree stumps or poles in selected sites along the banks of the reservoir or on areas destined to become islands with the flooding of the reservoir. In 1997 four platforms were used, two by Canada Geese one by Ferruginous Hawks and one by a pair of Osprey.





Table 2.

ARTIFICIAL AND IMPROVED CLIFF NESTING SITES 1989 -1997				
	Artificial holes	Utilized by Prairie Falcons	Utilized by other species	Total Occupied
Available in 1989	15	1	1 Raven 1 Canada Goose	3
Available in 1990	+32 = 47	3	1 Canada Goose 1 G.H. Owl	5
Available in 1991	+3 = 50	4	2 Canada Geese 1 G.H. Owl	7
Available in 1992	50	3	1 Canada Goose 1 G.H. Owl 1 Raven	6
Available in 1993	+1 = 51	5	1 Canada Goose 1 G.H. Owl	7
Available in 1994	= 51	4	1 Canada Goose 2 G.H. Owl	7
Available in 1995	= 51	3	1 Canada Goose 1 G.H. Owl	5
Available in 1997	= 47	3	1 G.H. Owl 1 Raven	5



## **5.0 DISCUSSION**

### **5.1 Monitoring Birds of Prey**

1997 proved to be an excellent year for monitoring the raptor populations associated with the Oldman Reservoir. Three pair of Prairie Falcons and one pair of Golden Eagle nested successfully in the Control areas, one pair of Ferruginous Hawks nested successfully on a nest platform south of Day's and Osprey nested for the third time on the platforms at Stevick's. Outside the reservoir but within the study area Ferruginous Hawks and Prairie Falcons nested successfully at traditional sites.

#### **5.1.1 Prairie Falcons**

Prairie Falcons were observed in four of the control areas. In 1997 pairs established in three of these area and all three fledged young during the current breeding season. In the study area a total of seven territories were occupied by breeding pairs of Prairie Falcons with five succeeded in fledging young. The resulting fledging success of 4 young per successful pair of Prairie Falcons is well above what is normally considered good fledging success ( 3.1 or 3.2 per successful pair as reported in Idaho by Ogden (1973) and the Pawnee Grassland in Colorado by Olendorff (1973). The overall production is 2.9 with only five of the seven nesting attempts succeeding. Fortunately the two nest failures do not appear to have been related to human interference as the sites are relatively inaccessible and at no time during the season did we observe people at or near the nest.





Table 3. PRAIRIE FALCON BREEDING SUMMARY 1989, 1995, 1997

NEST SITE	PAIRS ON TERRITORY			INDIVIDUALS OBSERVED			COURTSHIP OBSERVED			COPULATION OBSERVED			EGGS COUNTED ON VISITS			YOUNG FLEDGED		
	89	95	97	89	95	97	89	95	97	89	95	97	89	95	97	89	95	97
Old Bridge	Y	Y					Y	Y		Y								
Mercury	Y				Y		Y						4			4		
Dam	Y		Y				Y		Y									5
Bitango Eagle							Y											
Bitango Bridge	Y						Y									5		
Tennessee Creek					Y								4					
Welsch	Y						Y						4			4		
Horseshoe	Y						Y		Y									
Horseshoe#2	Y																	
Lang	Y	Y	Y				Y		Y				4			1		3
Maloff	Y	Y	Y				Y		Y				4					
Stevick					Y													
Castle Dairy	Y	Y					Y		Y				5	5		4	2	
Days	Y	Y	Y				Y		Y							2	5	5
1 <sup>st</sup> Porcupine		Y	Y				Y		Y								4	4
Double Ox-bow	Y						Y						4					
Buffalo Jump E.	Y	Y	Y				Y	Y	Y	Y	Y			5		4	5	
Buffalo Jump W.	Y						Y			Y			4					
Fairbrother's	Y	Y	Y				Y	Y					4	5		3	5	3
TOTALS	15	8	7	2	1		16	2	8	3	1		37			27	21	20

<sup>1</sup> light shading indicates nest sites lost to flooding of the dam<sup>2</sup> darker shading represents sites lost in 1996 due to slumping of the cliffs



### 5.1.2 Ferruginous Hawks

In 1985 a single pair of Ferruginous hawks was recorded nesting in the area to be impacted by construction activity. After relocating twice, this pair has nested each year since 1989 at a site approximately four kilometers from the dam. In 1990 and 1991 Ferruginous were recorded at two other locations within the study area but away from the reservoir. Then in.

**Table 4.**

Ferruginous Hawk Breeding Summary 1989, 1995,1997															
	PAIRS			INDIVIDUALS			COURTSHIP			COPULATION			YOUNG FLEDGED		
NEST SITE	89	95	97	89	95	97	89	95	97	89	95	97	89	95	97
Feedlot	Y			Y						Y					
Highway	Y	Y					Y						3	Y <sup>1</sup>	3
S. of Days <sup>1</sup>	Y						Y			Y			3		
Porcupine #2	Y	Y					Y						3	Y <sup>1</sup>	1(
Porcupine #3															
Porcupine #4															

Y<sup>1</sup> - young hatched but died in heavy rains

S. of Days<sup>2</sup> - pair relocated from 1<sup>st</sup> Porcupine

1992 and again in 1993 new pairs established territories and nested within the study area but again away from the reservoir.

This brought the total Ferruginous nesting in the study area to five all nesting some distance from the reservoir. Then in 1994 and again in the current field season a pair of Ferruginous Hawks were observed utilizing one of the nest platforms



immediately adjacent to the reservoir. It appears that this pair relocated roughly 1.5 km from their former nesting territory on 1<sup>st</sup> Porcupine. In the current year three pair of Ferruginous were observed, nested and were successful in raising young... As in the previous three years our observations indicate that the Ferruginous Hawks within the study area have been subjected to a minimum of human disturbance. We have found no evidence to suggest that human interference has affected the nest success of these birds during the past four years.

## **5.2 Wildlife Control Areas.**

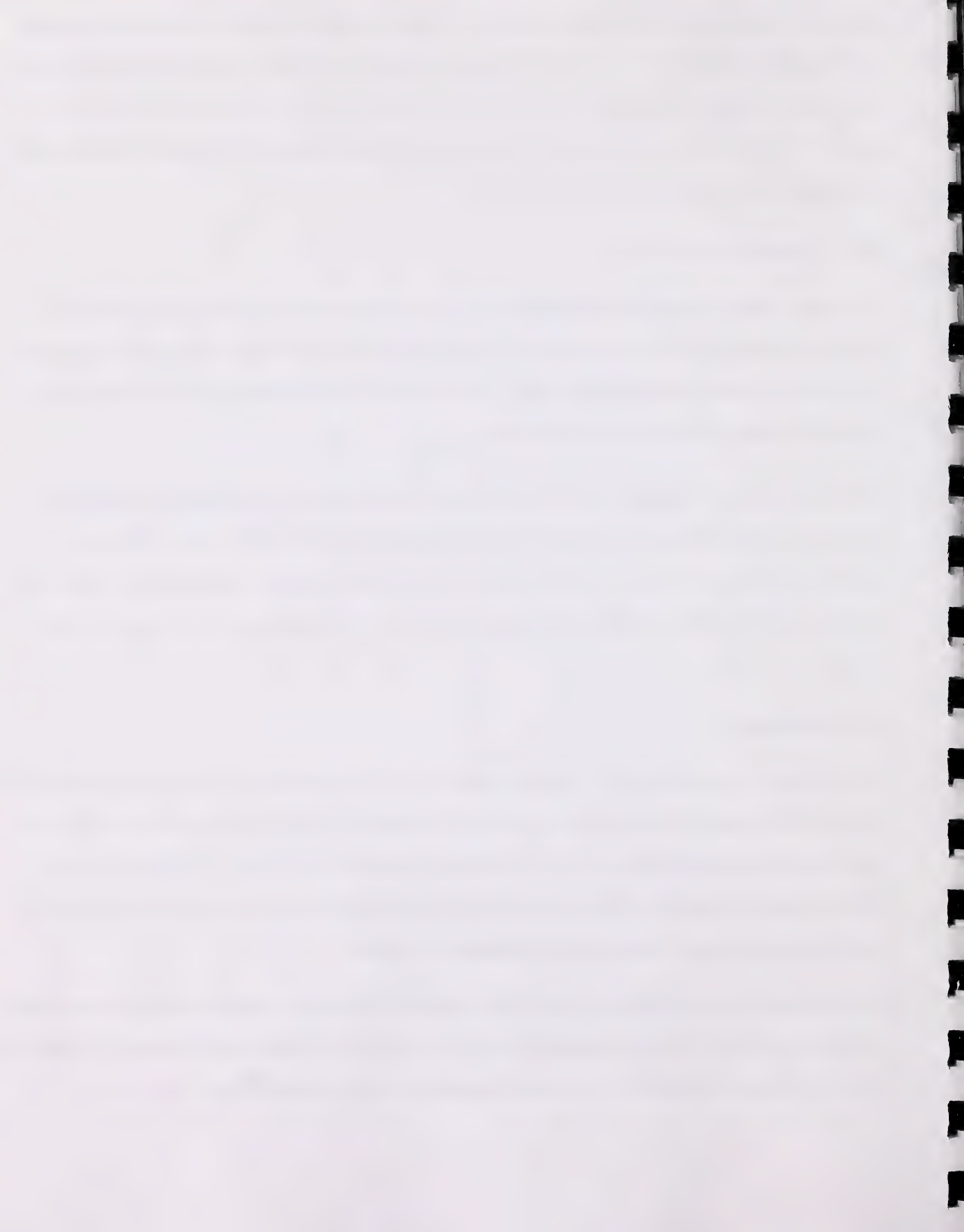
Six of seven control areas on the Oldman River Reservoir were established specifically to protect nesting birds of prey. In 1994 the areas were demarked, legislation was put forward and this project was subsequently undertaken to determine their effectiveness in protecting the breeding birds of prey. Four of the control areas were utilized in the 1997 breeding season, three by Prairie Falcons and the fourth by Golden Eagles

We did not observe any transgressions into the areas that were delimited by the buoys or markers. Although both pair of eagles failed in their nesting attempts it appears the nest failures resulted from totally different causes. There is no evidence to indicate that the failure of the Horseshoe pair was due to human interference. Our observations confirmed that the pair occupied the territory, copulated and laid using last year's nest. Incubation progressed with both pair until they deserted.

## **5.3 Disturbance**

In the 1989 report I suggested that next to the actual destruction of nest sites by flooding, the most serious problem for both the Prairie Falcon and the Ferruginous Hawks would probably be disturbance. As in previous years we have taken every opportunity to document any disturbance that could be associated to nest desertion, however as in the past we did not attempt to stop such disturbance when encountered nor to interfere with any observed problem. Our observations of the activities and the subsequent results were simply documented and reported.

Our observations suggest that with the exception of the territories downstream of the dam human interference was minimal during the current year. Our observations suggest that the public respected the Wildlife Control Areas and indicate that both the falcons and eagles nesting in the control areas were not subjected to any serious disturbance from people.





## **5.4 Artificial Nest Sites**

As noted in 1993, following the flooding of the reservoir several of the original nest sites are no longer available.

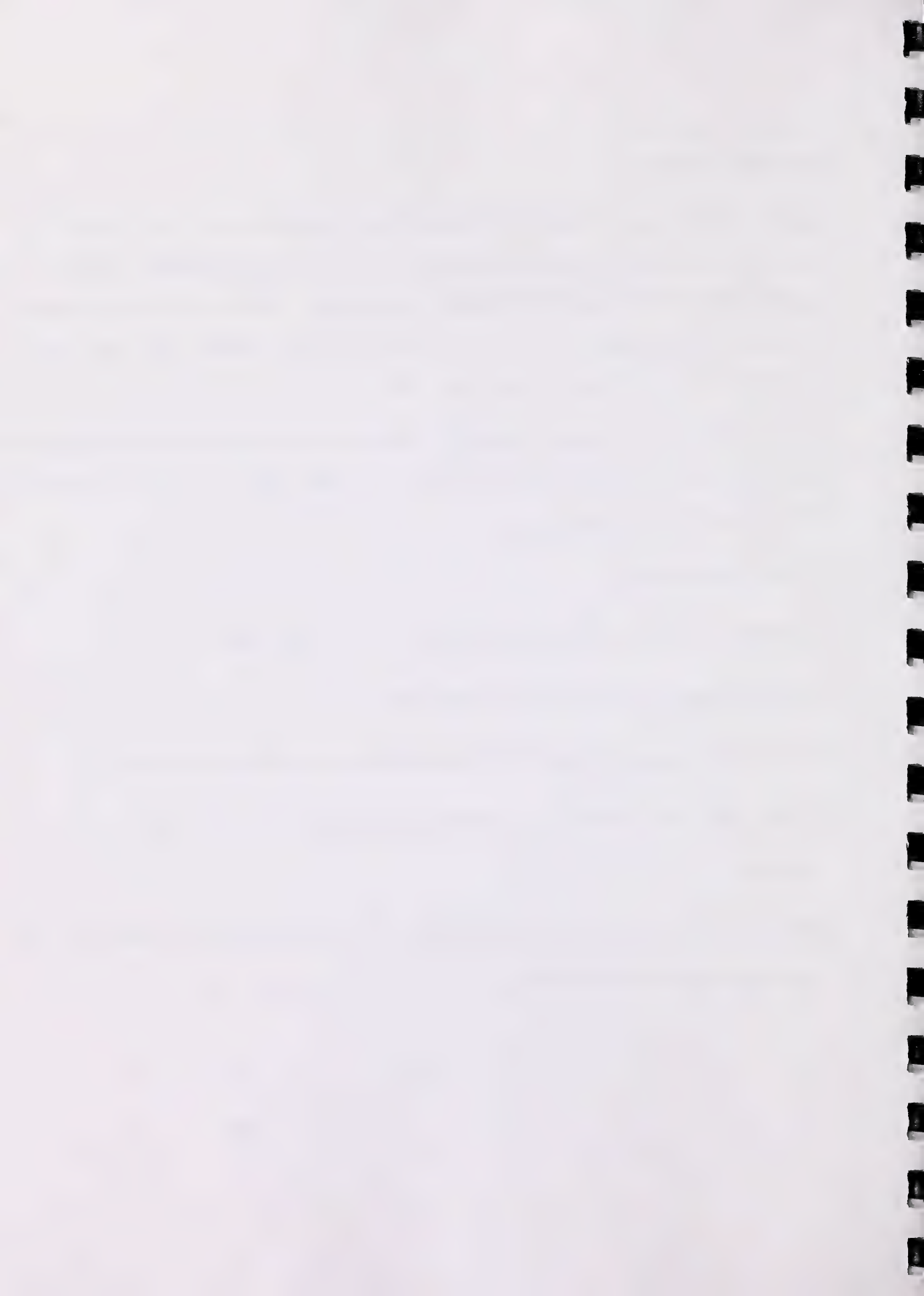
However, for those territories where nest sites have remained or where artificial sites are available the breeding pairs returned and utilized both natural and artificial holes in their original territories. Other pairs either relocated or returned to old territories outside of the reservoir. A total of five artificial holes were occupied during the current breeding season, three by Prairie Falcons, one by Ravens and one by Great Horned Owls.

Four nesting platforms were also utilized for nesting in 1997, two by Canada Geese, one by Ferruginous Hawks and one by Osprey. Several others were utilized as feeding platforms and hunting perches. Ospreys were observed frequently using the poles as perch points in May and early June.

## **6.0 Recommendations:**

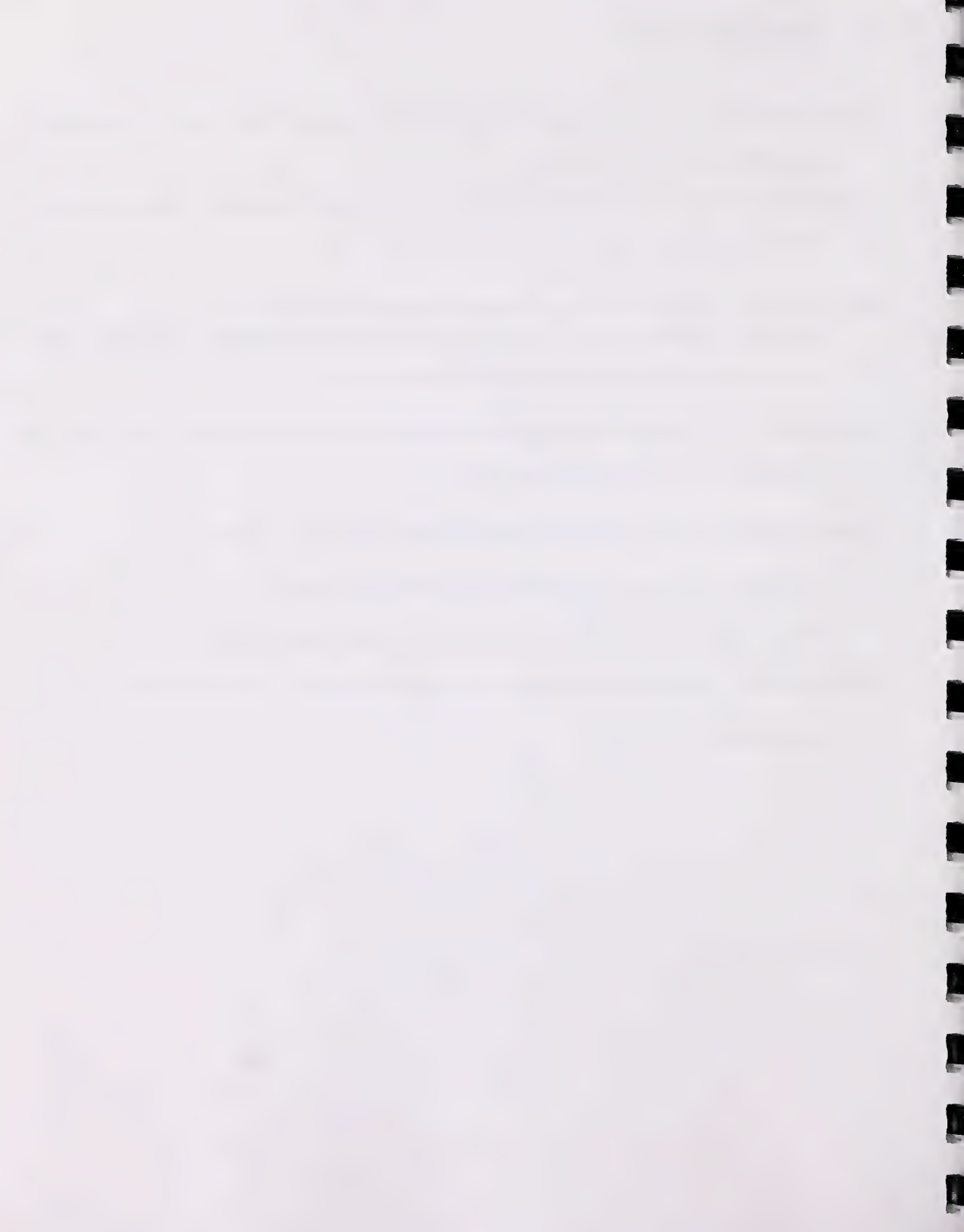
I would like to suggest that serious consideration be given to the following;

1. Creation of replacement holes at Stevicks and Castle.
2. Modify the nest sites at the Maloff cliff to make them safe from mammalian predators.
3. Replace some of the platforms with metal poles and cement bases and install windbreaks on each platform.
4. Maintain the control areas and the use of the buoys . The public appears to be respecting them and the raptors are breeding successfully.



## 7.0 *LITERATURE CITED*

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## 8.0 ACKNOWLEDGEMENTS

I would like to acknowledge the assistance of Mr. John Campbell Jr. in the raptor banding; and my wife Lorraine as a field assistant.





## Appendix 1. Summary of Oldman Prairie Falcon Nest Data 1968-1987

Prairie Falcon Nest Occupancy 1968-1987															
	68	69	70	71	72	73	74	75	76	77	78	80	85	86	87
OB	F	F	O	F	F	F							F	F	F
ME	F	F	F	S		F		F	F	F	F	F	F	F	F
DAM			F	F			F				F	F	S	S	
BJE	F	F					F		F	F	F	S	F	F	F
BJW														U	U
BBR													F	F	F
BEA														U	U
TEN														U	U
WEL					F	F	O	F	O	F	F		F	U	U
HO1							F	F	F	F	S		F	U	U
HO2															
LAN	F	F	O	O	O	O	O	O	O	O	O			U	U
MAL							F	F	F	F			F	U	U
CD															
STE															
DAY															
JP															
DOX													F		
FA		F	F	F	F	F	F	F	F	F	F	F	U		

#F	4	5	3	3	3	4	5	5	5	6	5	3	8	4	4
#S						1					1	1	1	1	
#O			2	1	1	1	2	2	1	1					

F - Pair of Prairie Falcons on territory

S - A single Prairie Falcon on territory

O - Pair of Great Horned Owls nesting in the territory-

*Shading* - Prairie Falcon territories flooded by the reservoir



## Appendix 2. Summary of Oldman Prairie Falcon Nest Data 1989-1996

Prairie Falcon Nest Occupancy 1989-1996								
	89	90	91	92	93	94	95	96
OB	S	F	F	F	F	F	F	
ME	F	F	F		F			
DAM	F		O		S			F
BJE	F	F	F	F	F	F	F	F
BJW	F	F	F	F	F			
BBR	F	F	O					
BEA		F						
TEN	S	F	F	F				
WEL	F	F	F	S				
HO1	F	F	F	F				
HO2		F						
LAN	F	F	F	S	F	F	F	F
MAL	F	F	F	F	F	F		F
OD	F	F	F	O	O	F/O	F	
STE		S	S	F	F	O	O	R
DAY	F				F	F	F	F
IP		F	F	F	F	F		F
DOX	F		F	S				
FA	F	F	F	F	F	F	F	F

#F	13	15	13	9	10	7	6	7
#S	2	1	1	3	1			
#O			2	1	1	2		

F - Pair of Prairie Falcons on territory

S - A single Prairie Falcon on territory

O - Pair of Great Horned Owls nesting in the territory

R - Ravens

*Shading* - Prairie Falcon territories flooded by the reservoir







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